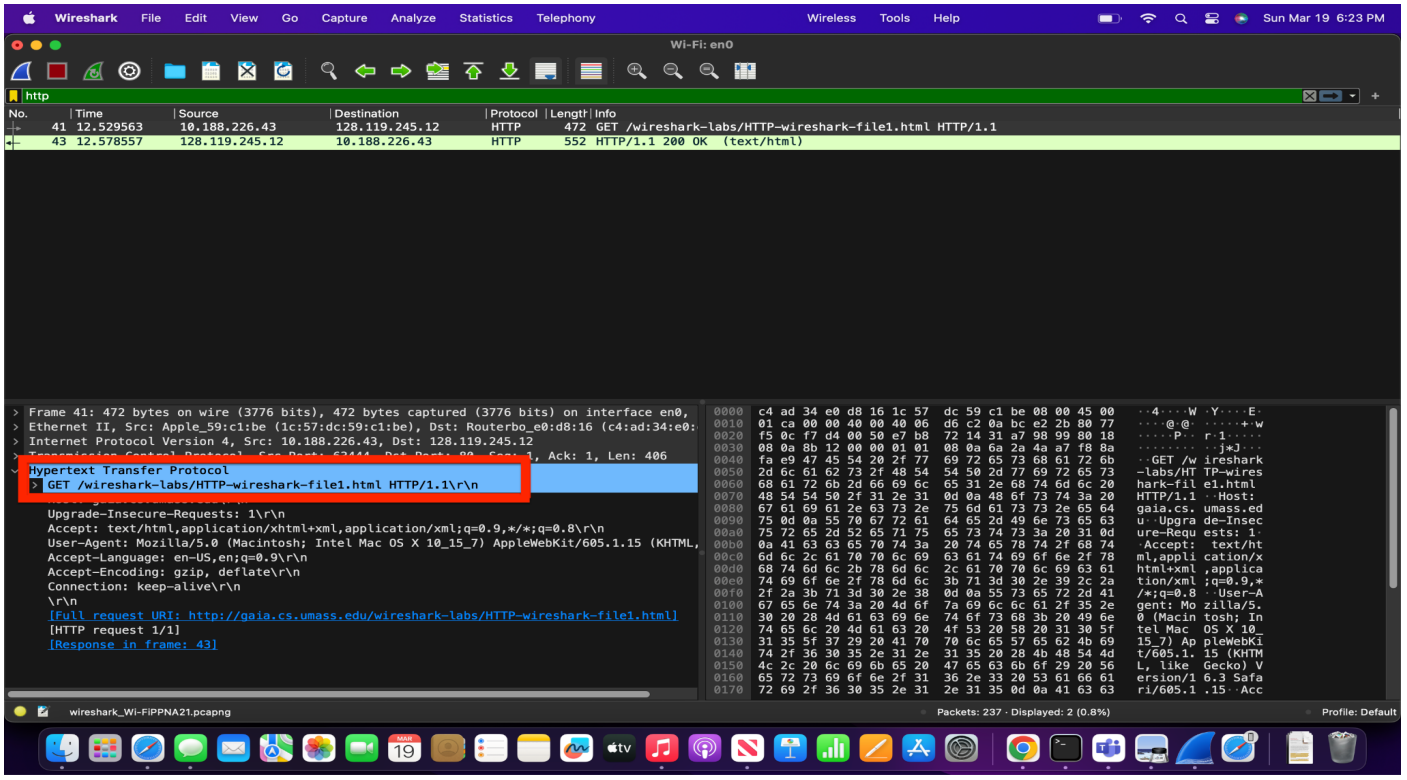
Name: Ayushi Patel

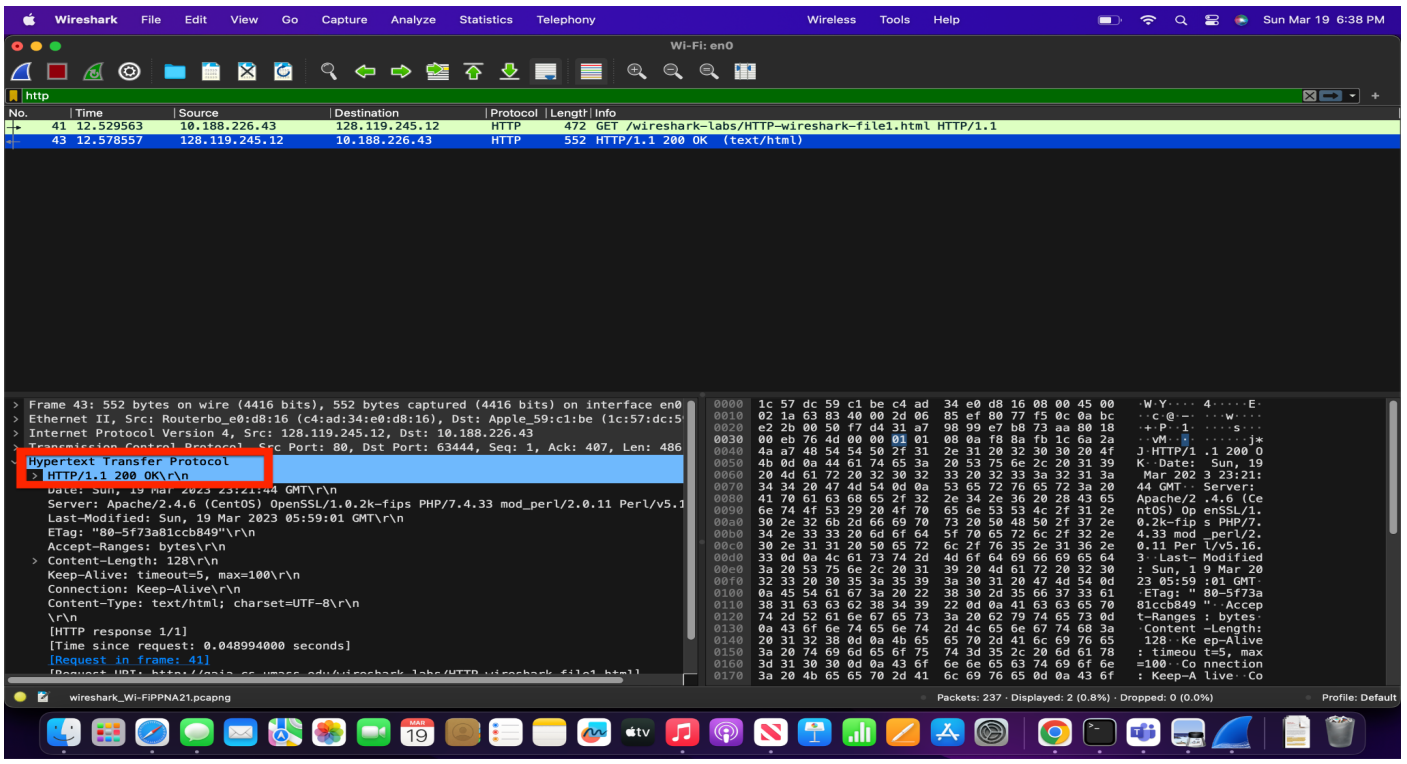
CSE 5344 : Computer Networks

Project 2

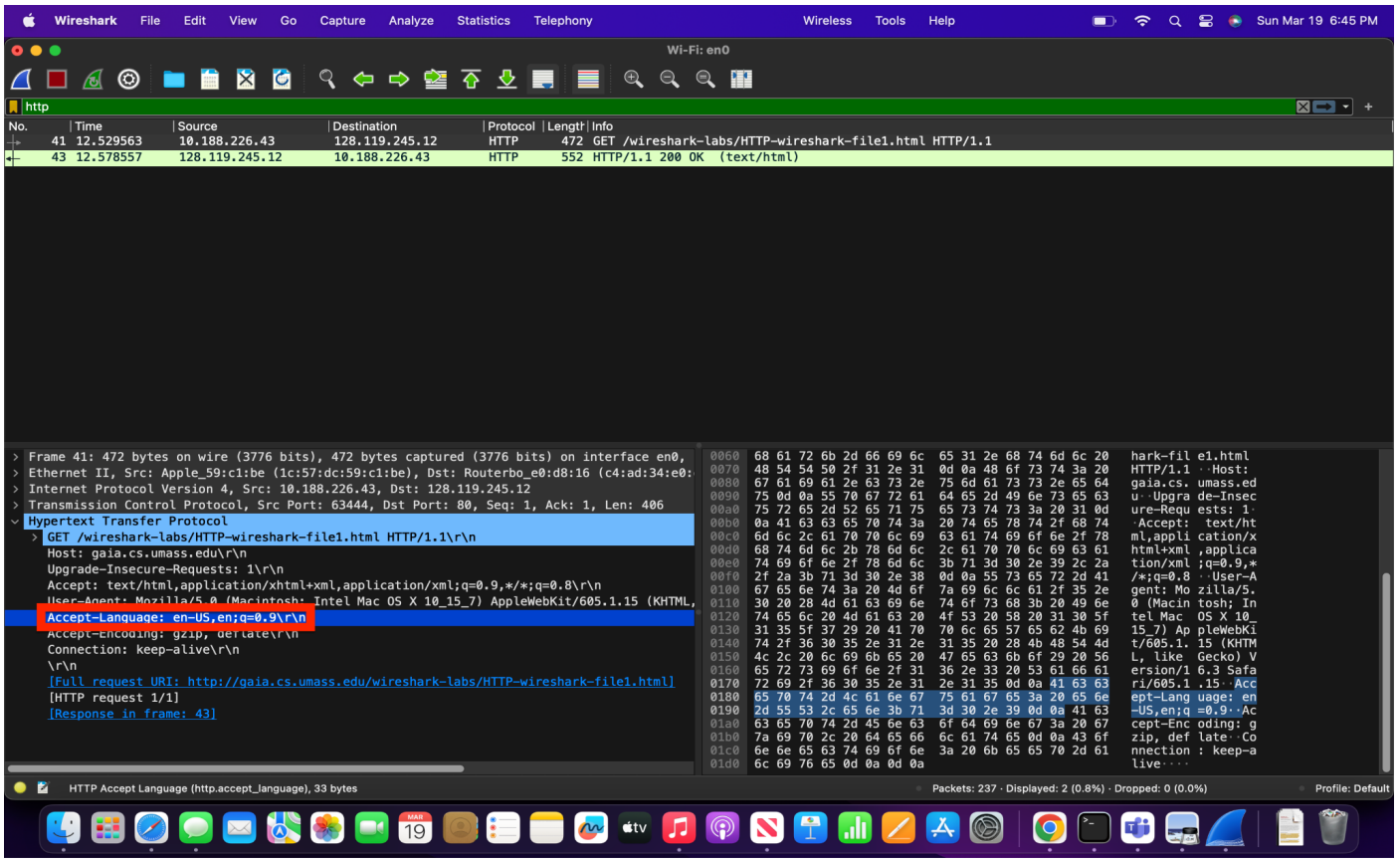
The Basic HTTP GET Response Interaction

1. Is your browser running HTTP version 1.0 or 1.1? What version of HTTP is the server running?
    - The browser is running HTTP version 1.1 and the server is running HTTP version 1.1.

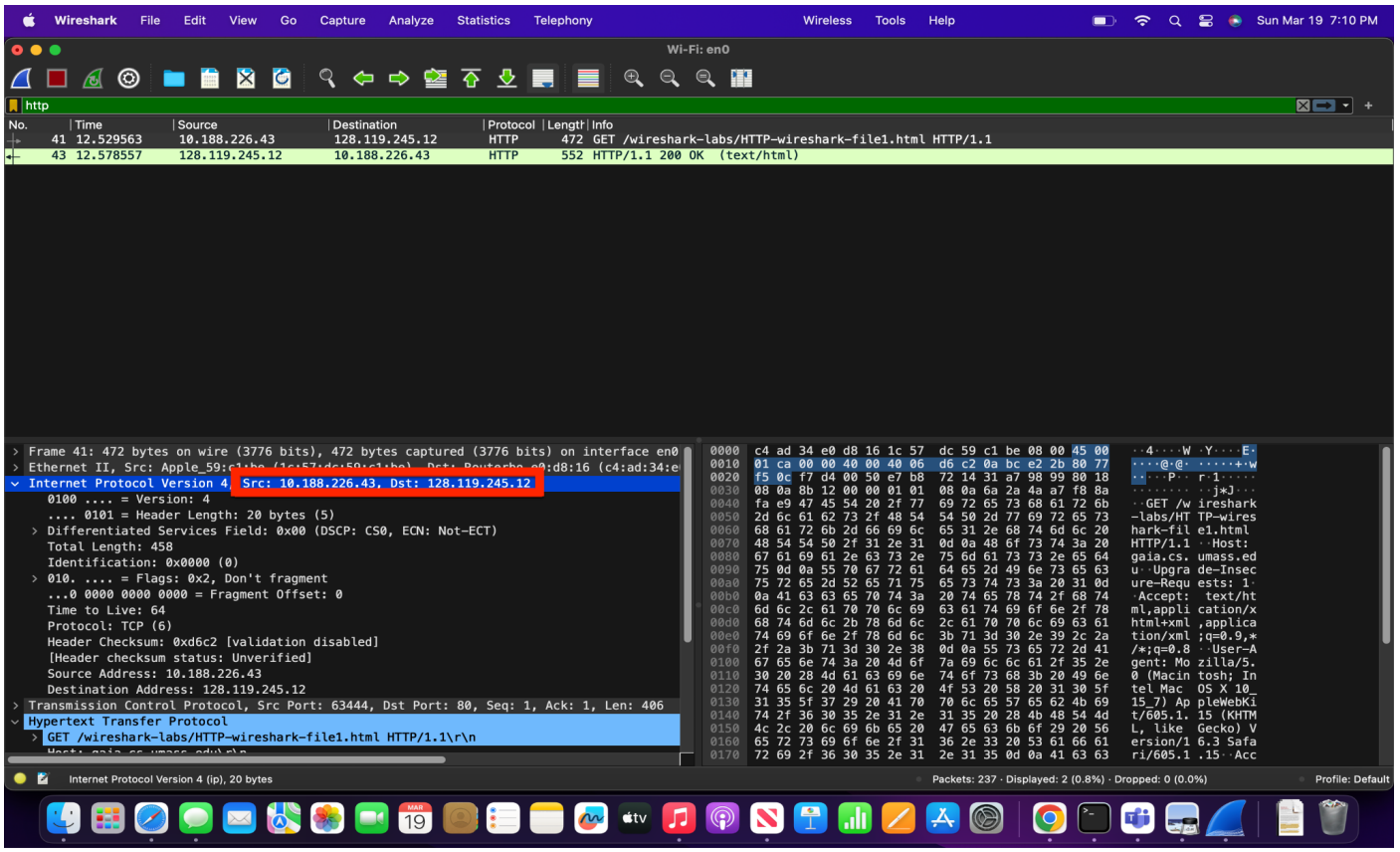




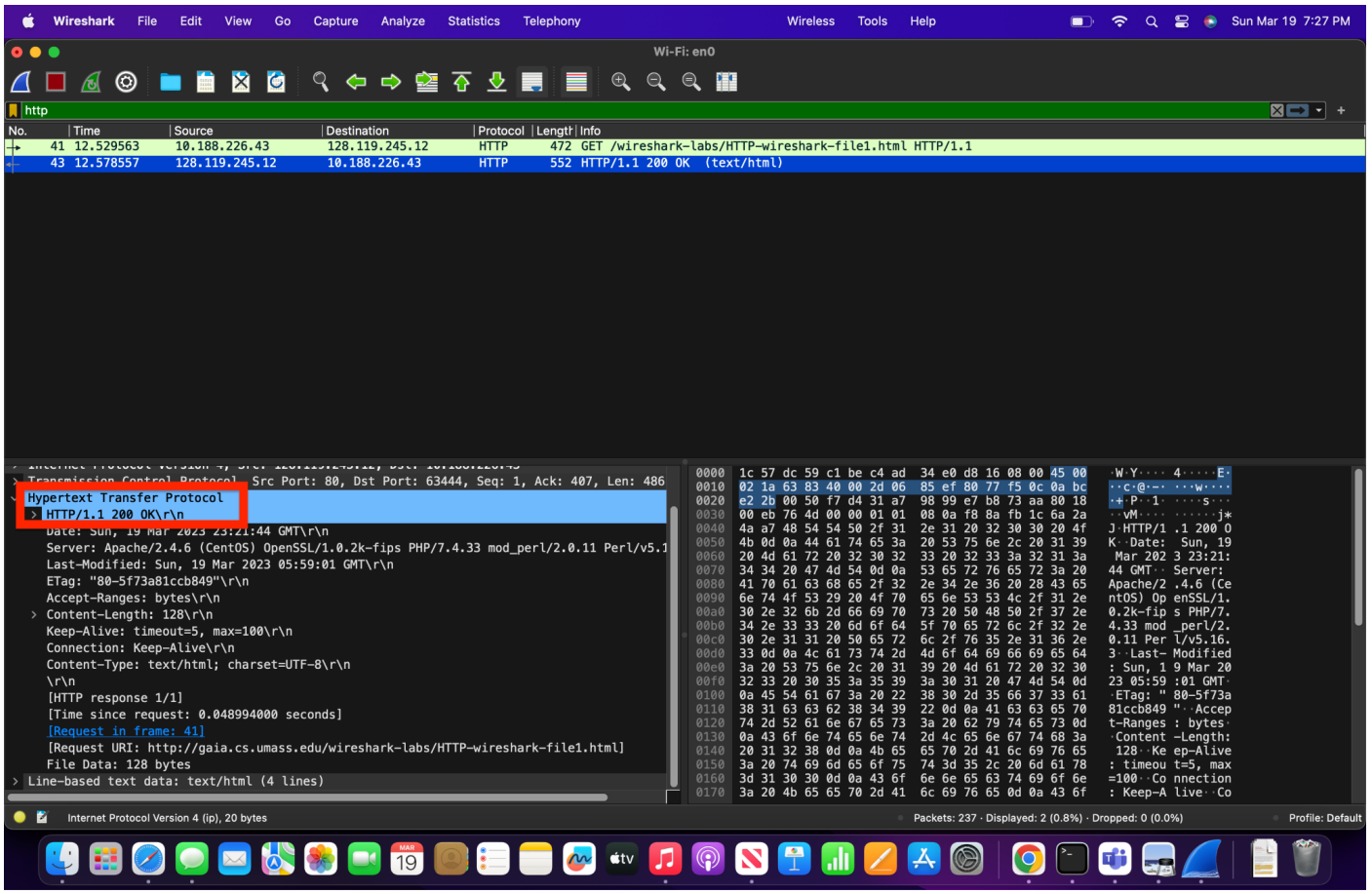
2. What languages (if any) does your browser indicate that it can accept to the server?
    - The browser can accept 'en-US'



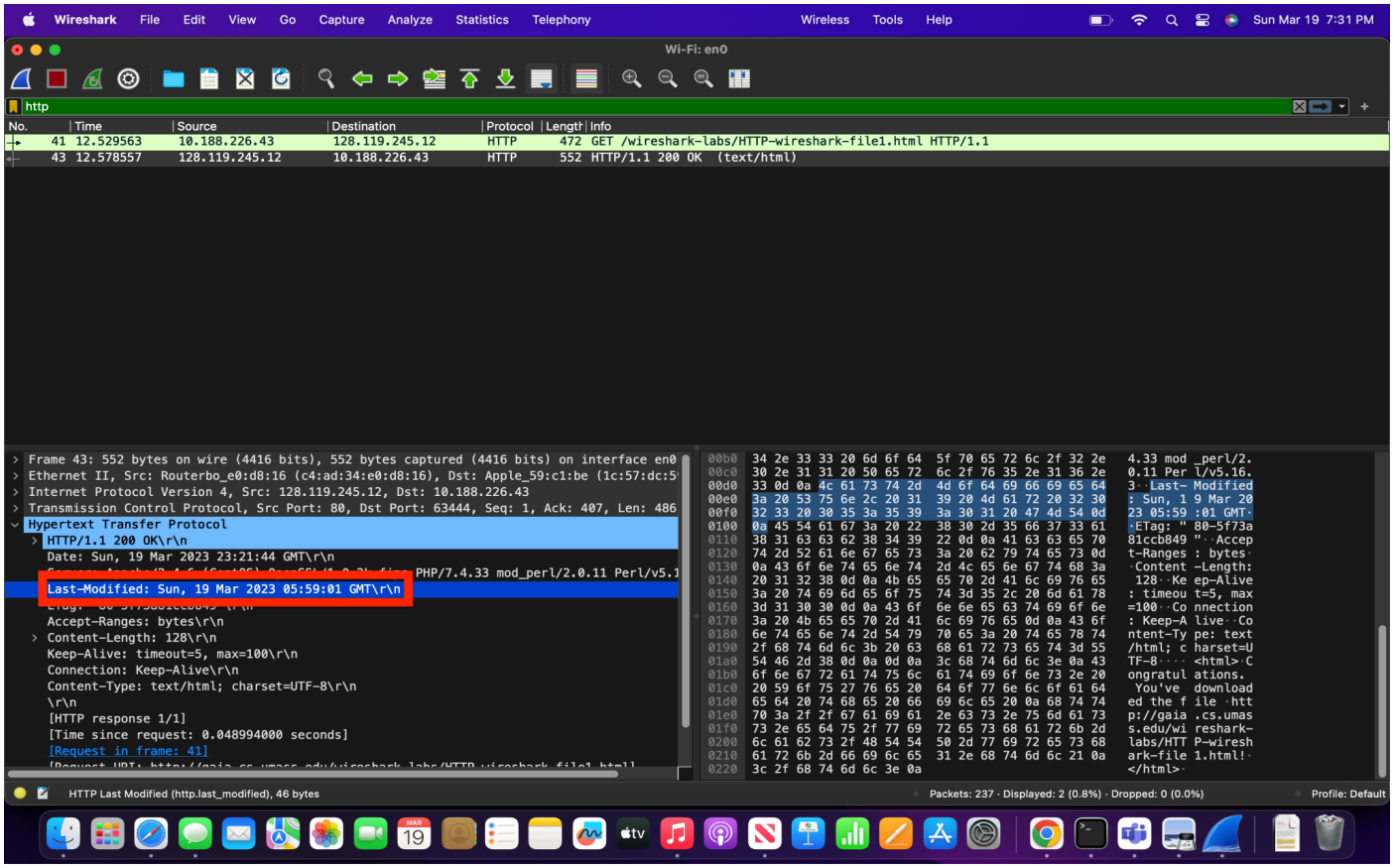
3. What is the IP address of your computer? Of the gaia.cs.umass.edu server?
    - IP address of my computer: 10.188.226.43 and IP address of server: 128.119.245.12



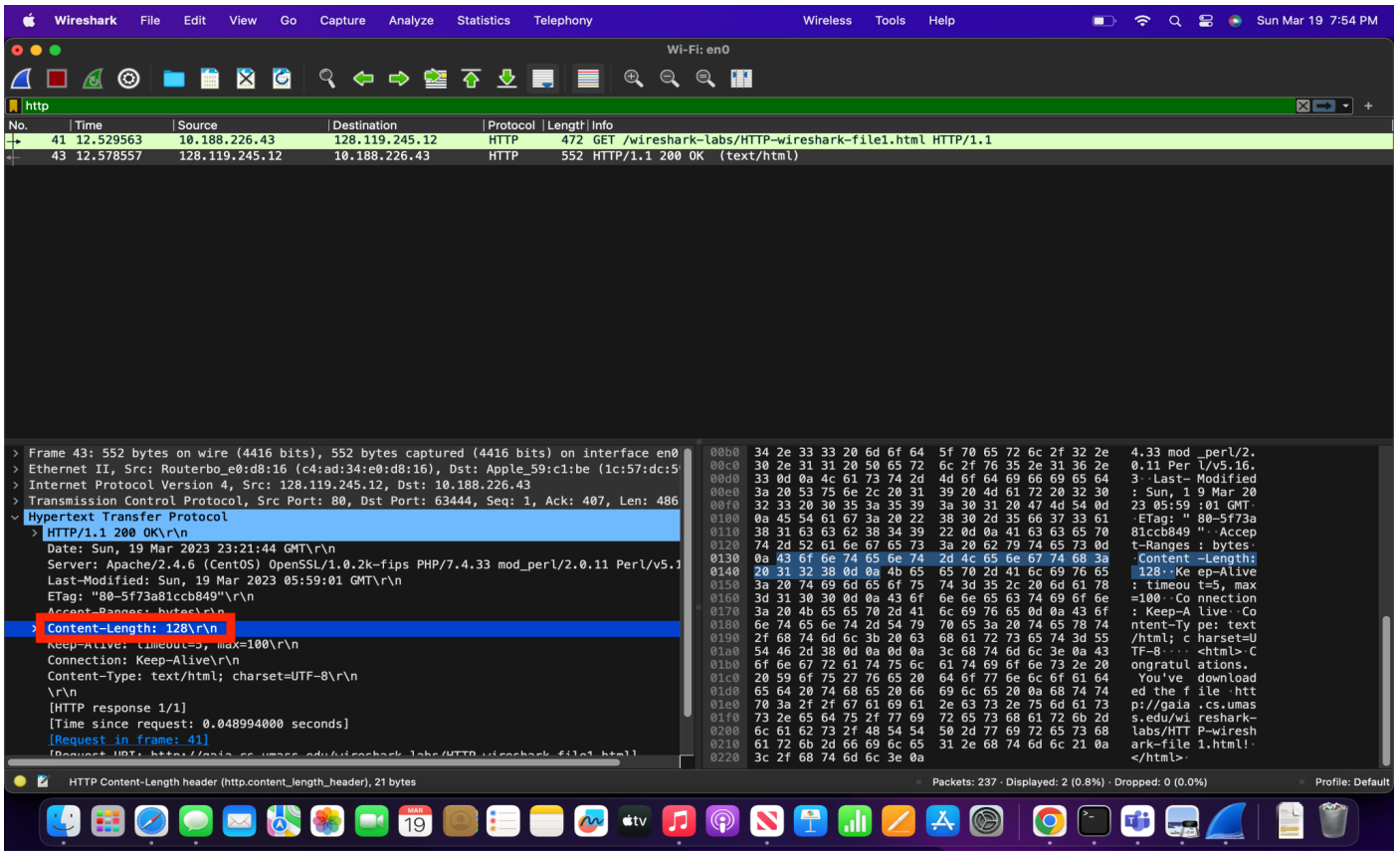
4. What is the status code returned from the server to your browser?
    - The status code returned from the server to browser is : 200 OK



5. When was the HTML file that you are retrieving last modified at the server?
    - The HTML file was last modified on Sun, 19 Mar 2023 05:59:01 GMT



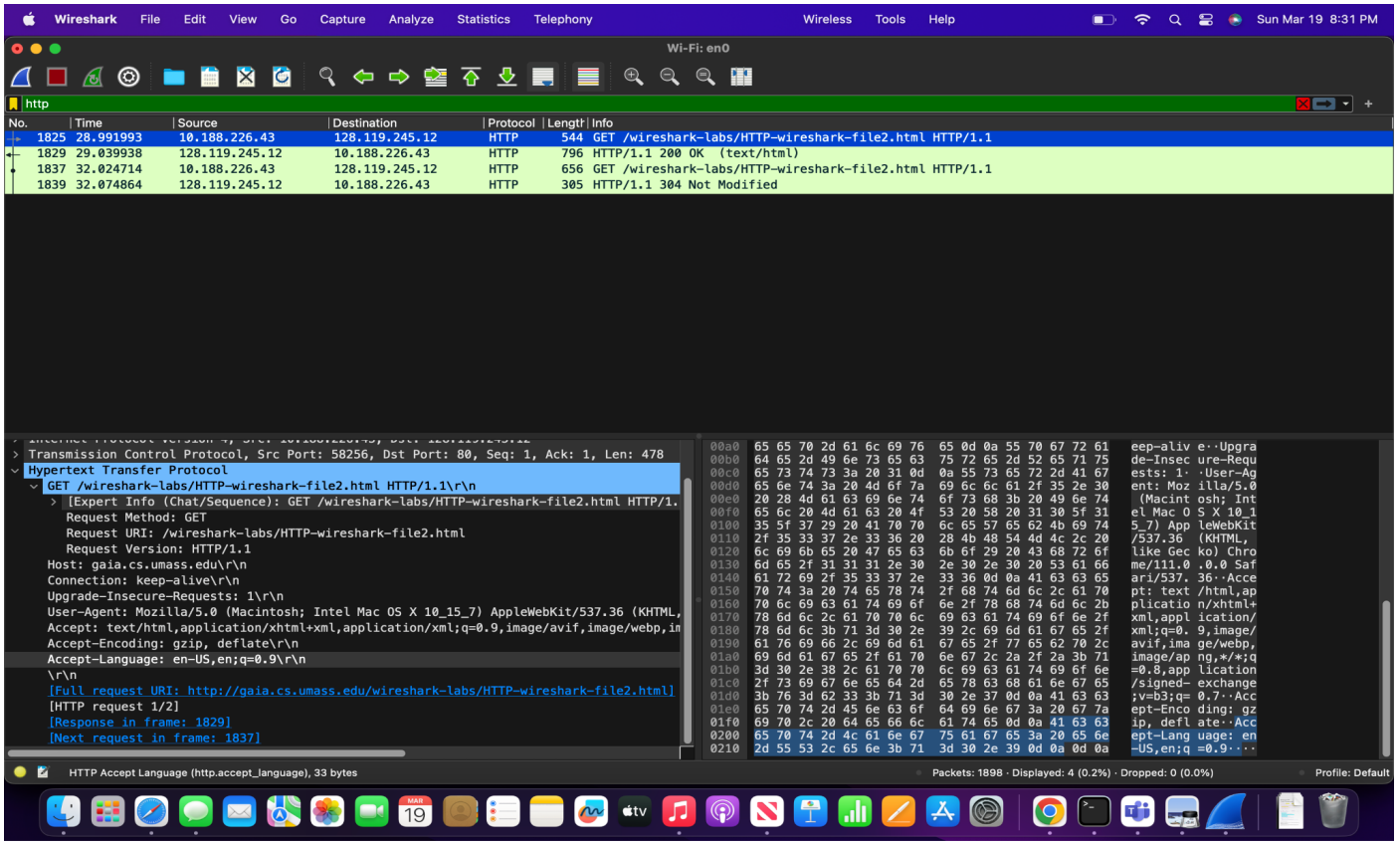
6. How many bytes of content are being returned to your browser?
    - 128 bytes are being returned to the browser.



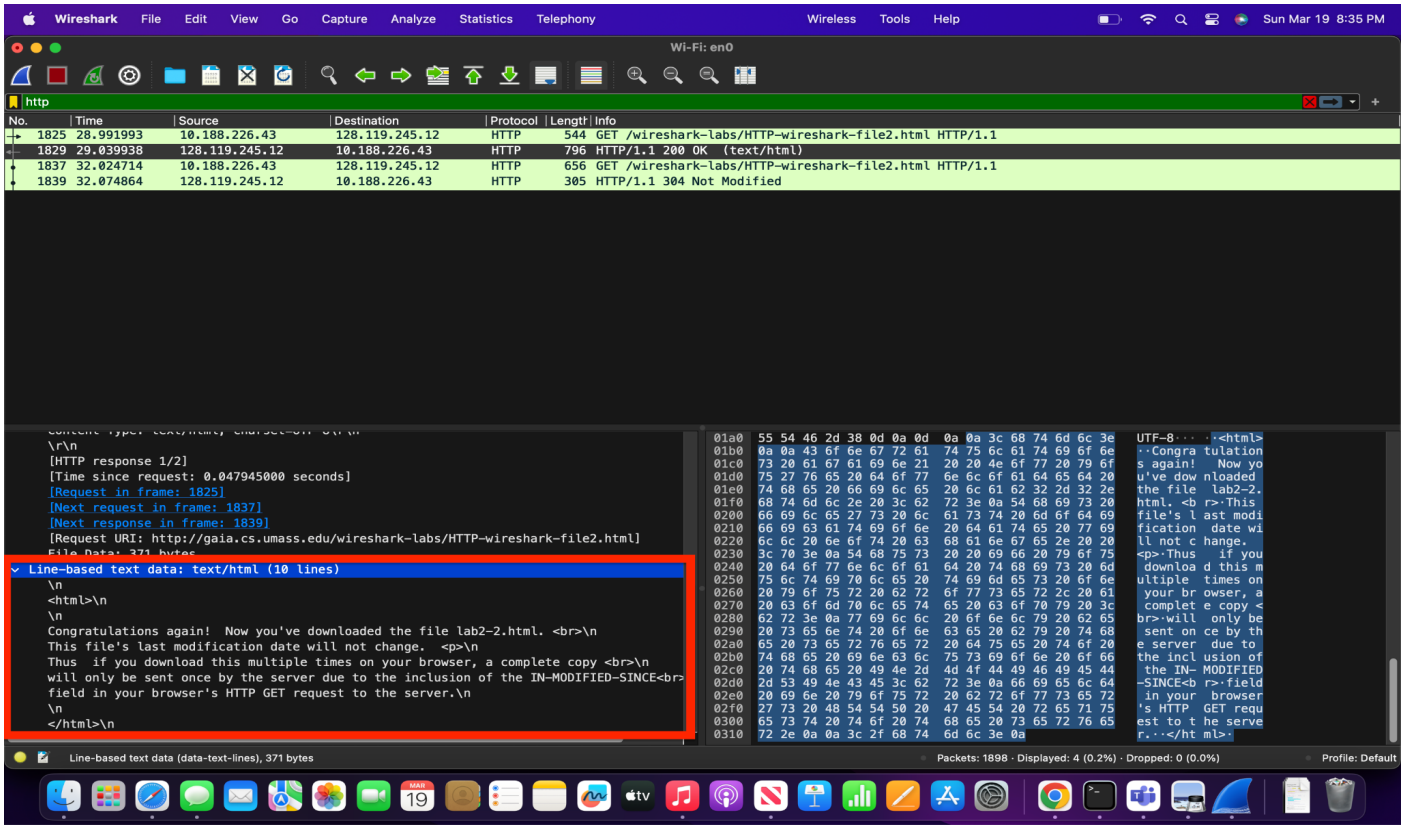
7. By inspecting the raw data in the packet content window, do you see any headers within the data that are not displayed in the packet-listing window? If so, name one.
    - No, all of the headers can be found in the raw data.

The HTTP CONDITIONAL GET Response Interaction

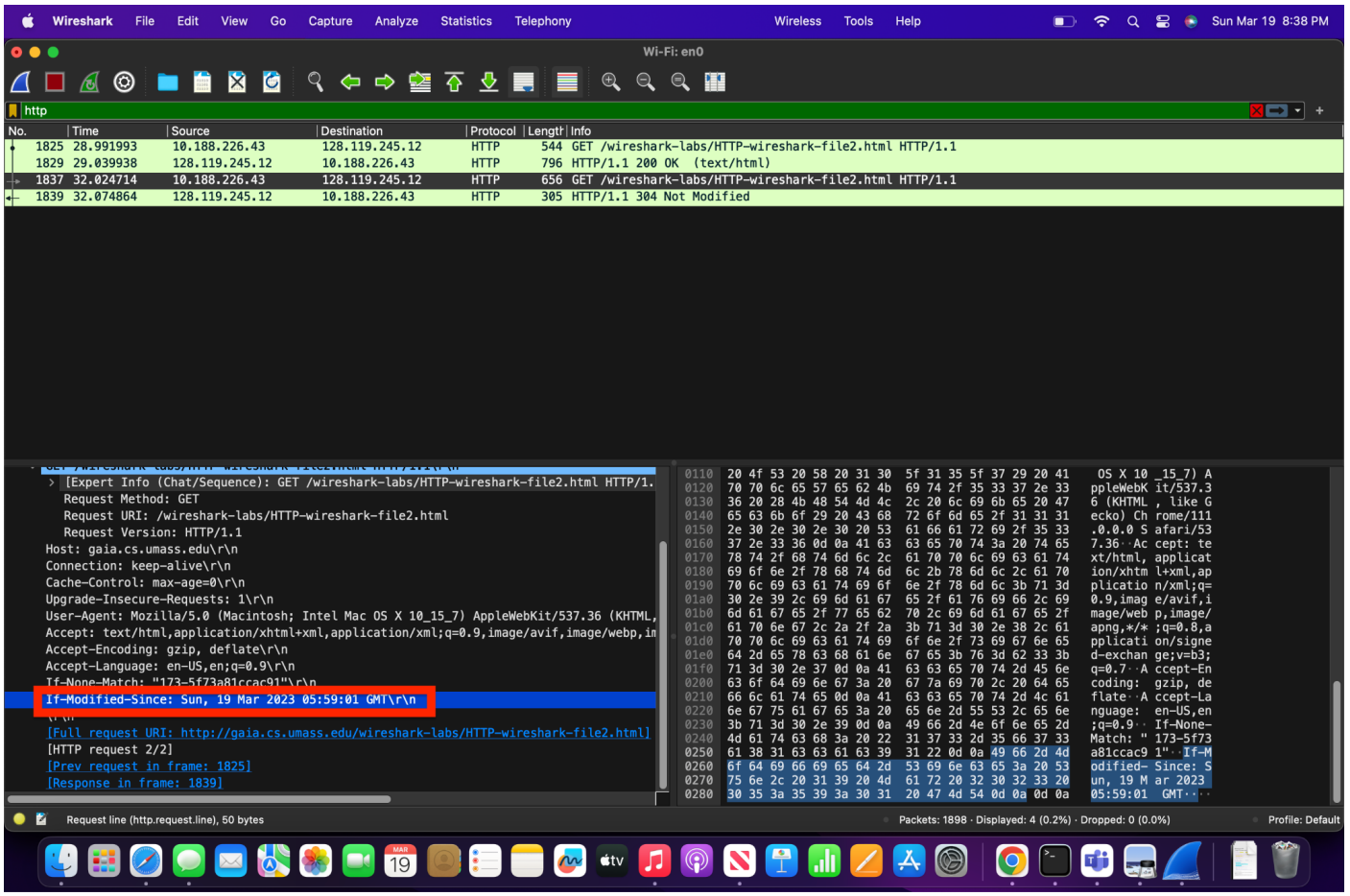
8. Inspect the contents of the first HTTP GET request from your browser to the server. Do you see an “IF-MODIFIED-SINCE” line in the HTTP GET?
    - No, there is no “IF-MODIFIED-SINCE” line in the first HTTP GET.



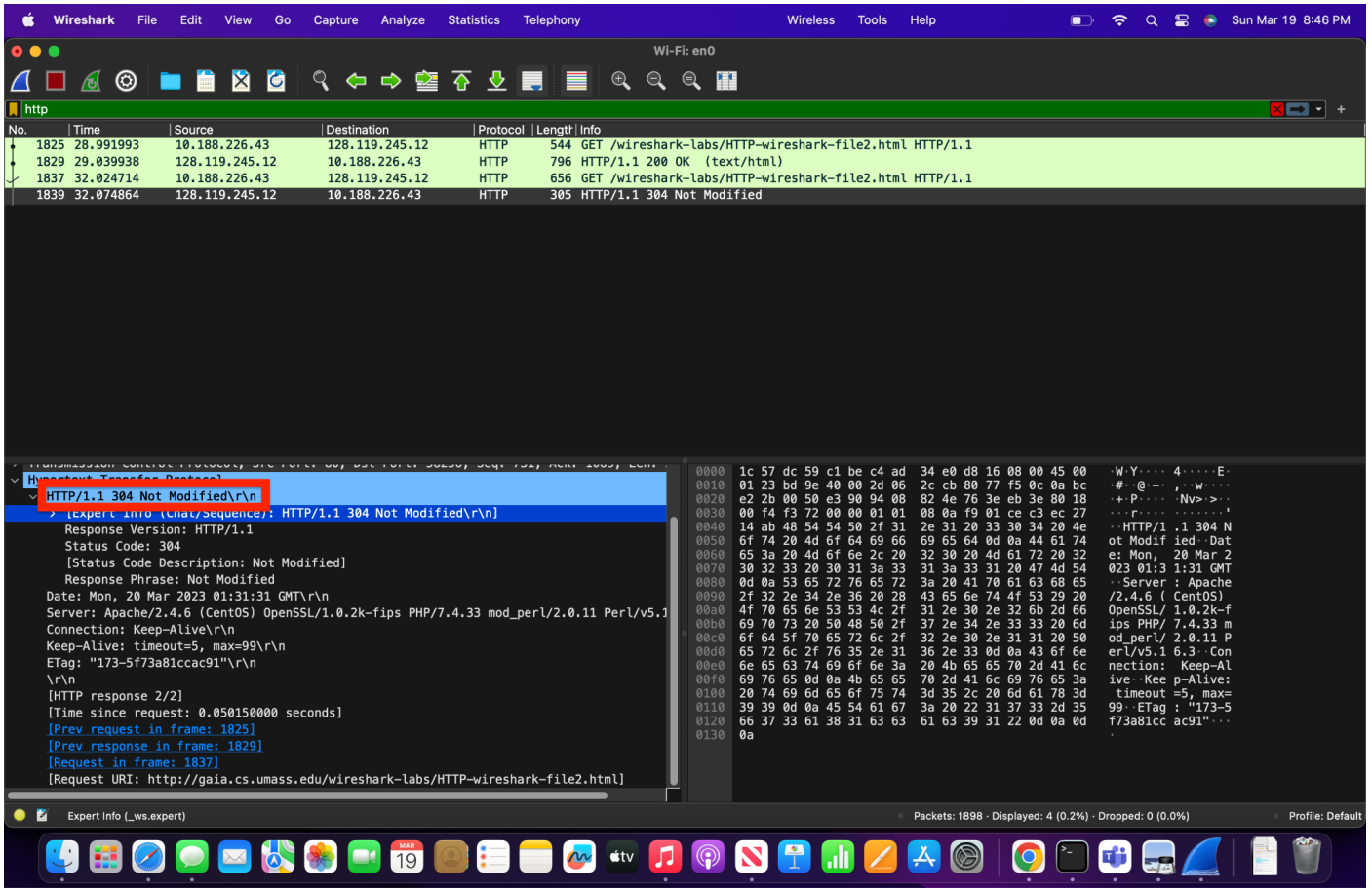
9. Inspect the contents of the server response. Did the server explicitly return the contents of the file? How can you tell?
    - Yes because we can see the contents in the Line-based text data field.



10. Now inspect the contents of the second HTTP GET request from your browser to the server. Do you see an “IF-MODIFIED-SINCE:” line in the HTTP GET? If so, what information follows the “IF-MODIFIED-SINCE:” header?
    - Yes, there is an “IF-MODIFIED-SINCE” line in the second HTTP GET request. The information followed is: Sun, 19 Mar 2023 05:59:01 GMT which is the date of the last modification of the file from the previous get request.

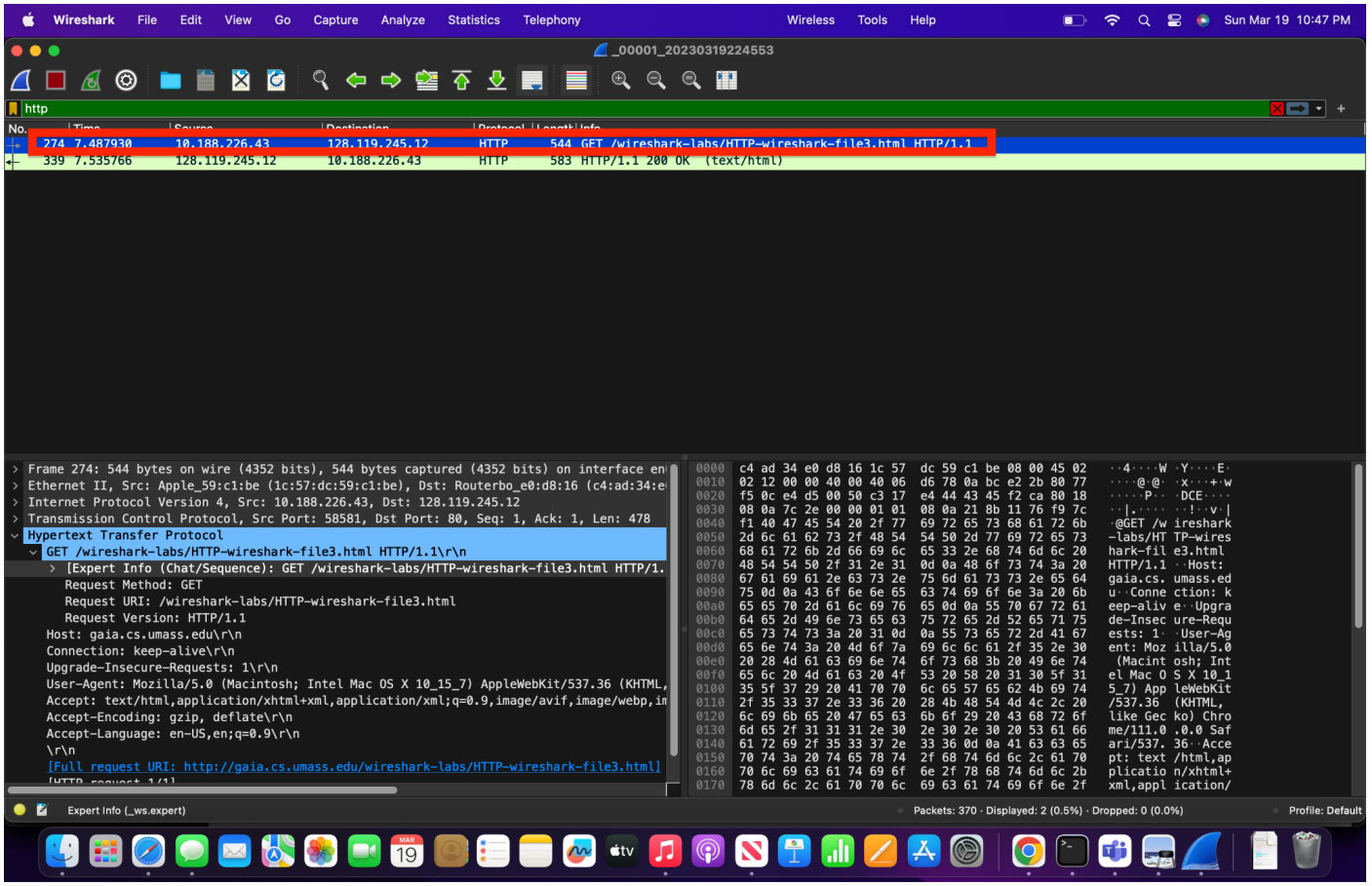


11. What is the HTTP status code and phrase returned from the server in response to this second HTTP GET? Did the server explicitly return the contents of the file? Explain.
    - The HTTP Status Code and phrases returned from the server in response to the second HTTP GET are “304” and “Not-Modified”. The server didn’t explicitly return the contents of the file since the browser loaded it from its cache.

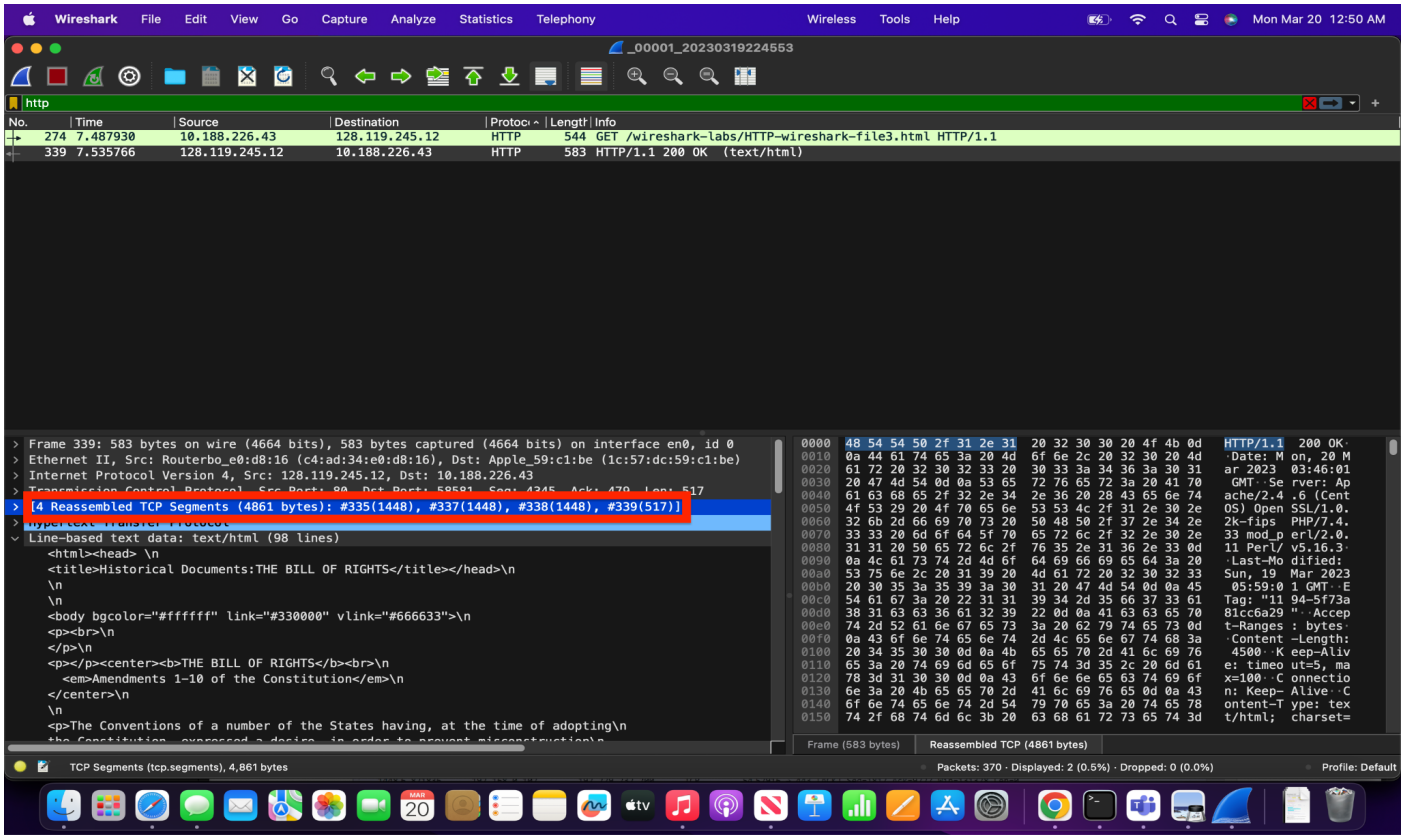


Retrieving Long Documents

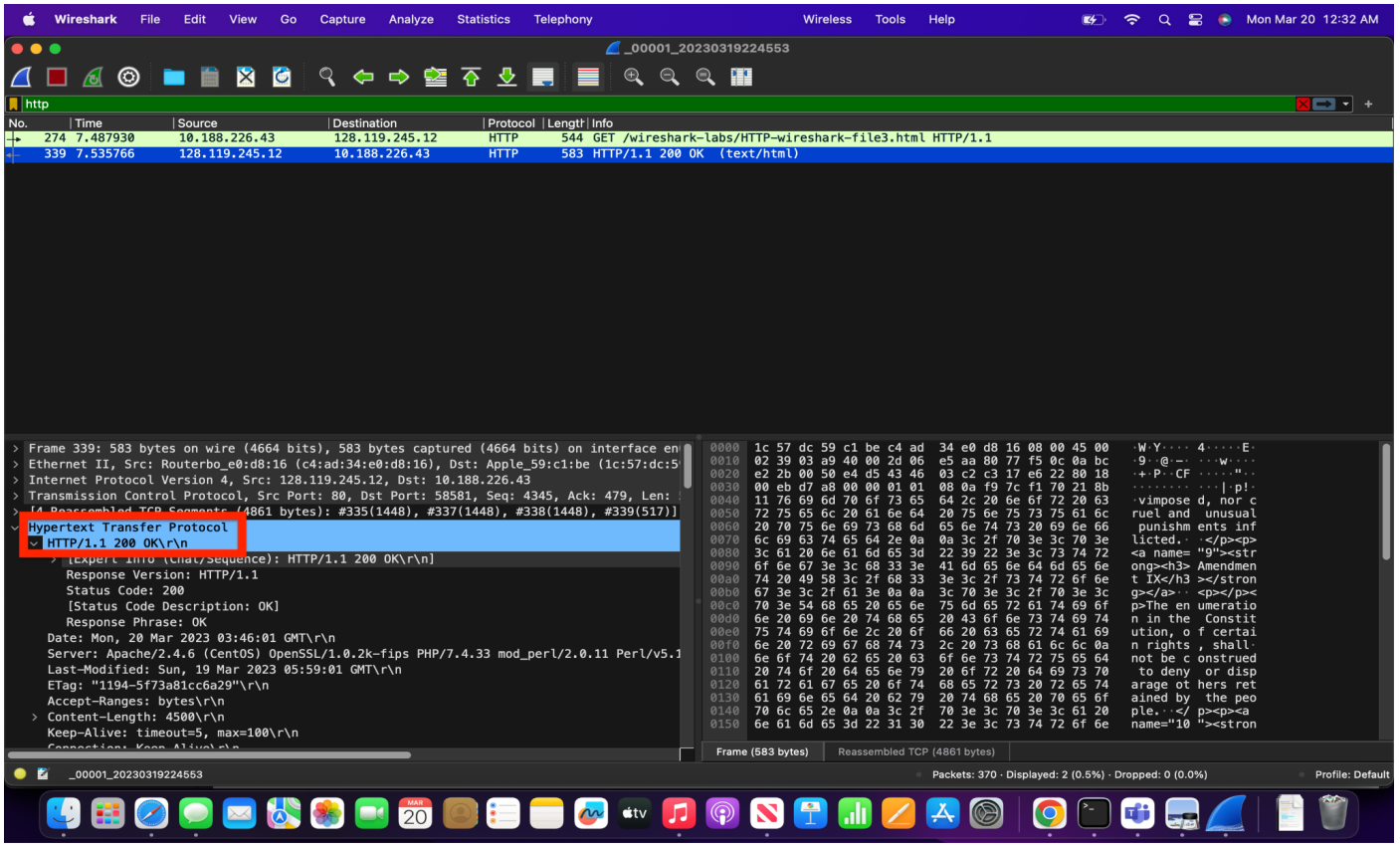
12. How many HTTP GET request messages did your browser send? Which packet number in the trace contains the GET message for the Bill or Rights?
    - The browser sent only one HTTP GET request message. Packet number 274 contains the HTTP GET message.



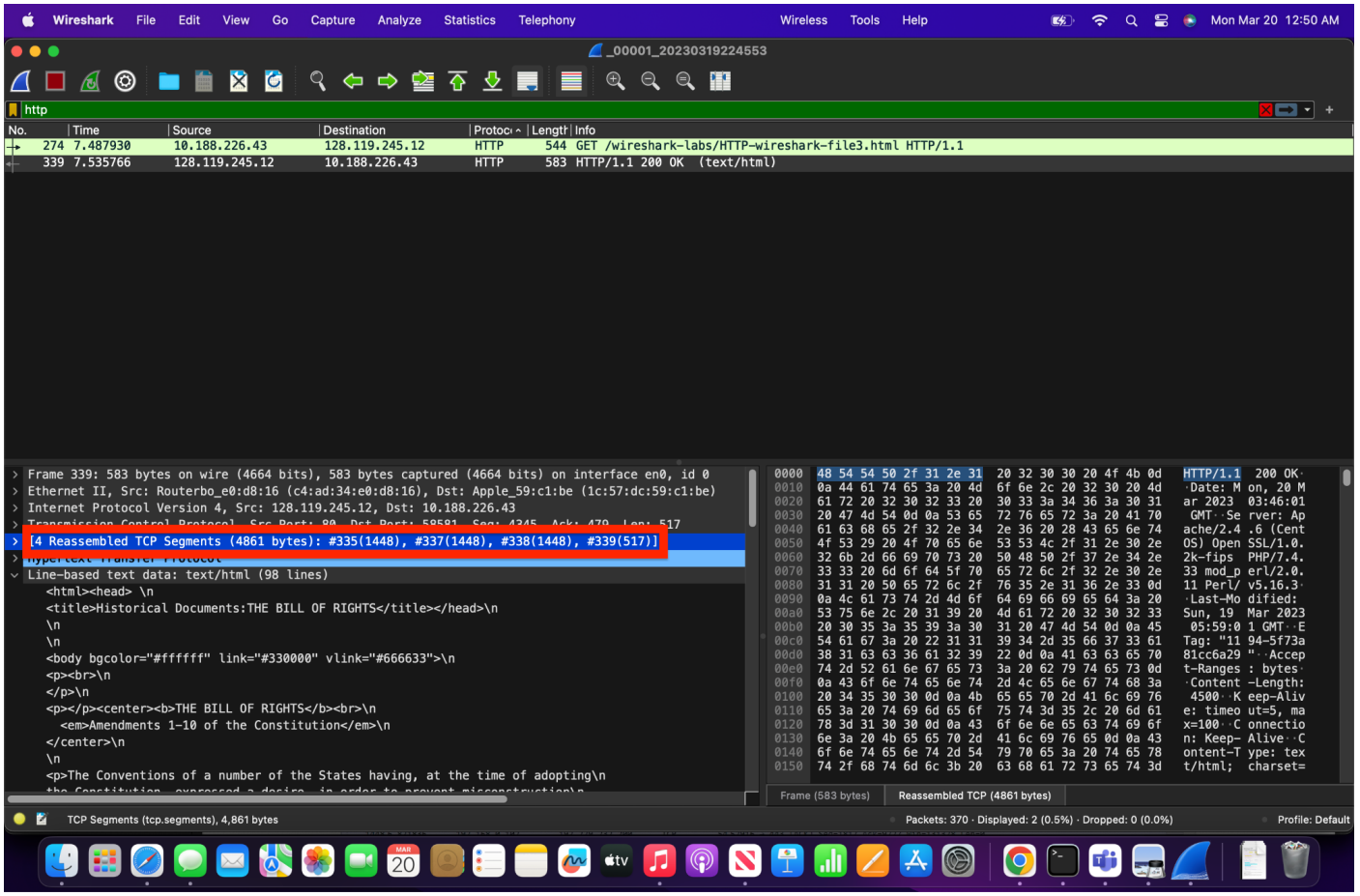
13. Which packet number in the trace contains the status code and phrase associated with the response to the HTTP GET request?
    - Packet number 335 in the trace contains the status code and phrase associated with the response to the HTTP GET request.



14. What is the status code and phrase in the response?
    - The status code and phrase in response is '200 OK'.

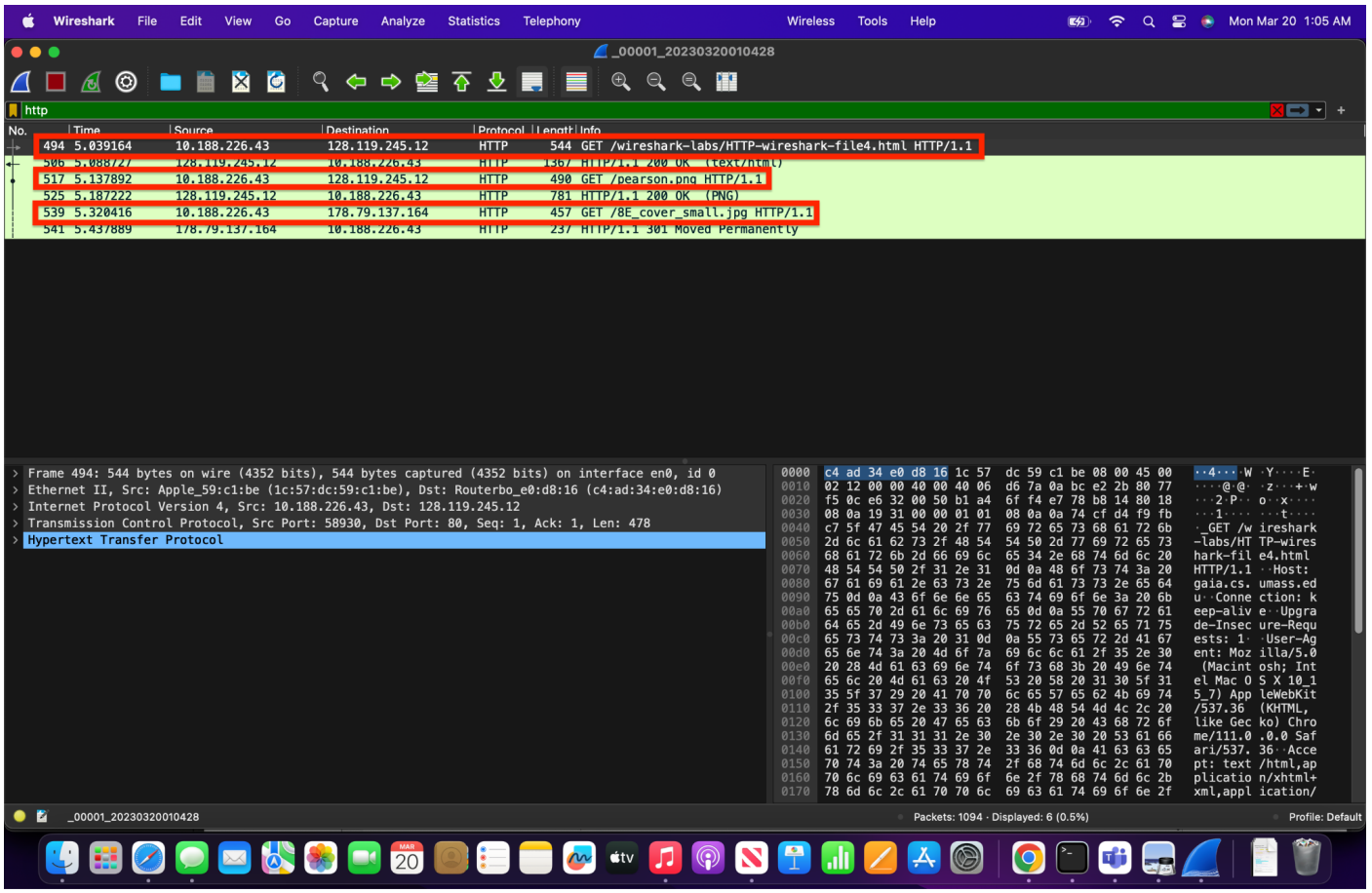


15. How many data-containing TCP segments were needed to carry the single HTTP response and the text of the Bill of Rights?
    - There were 4 data containing TCP segments containing 1448 ,1448 ,1448 and 517 bytes respectively for a total of 4861 bytes.

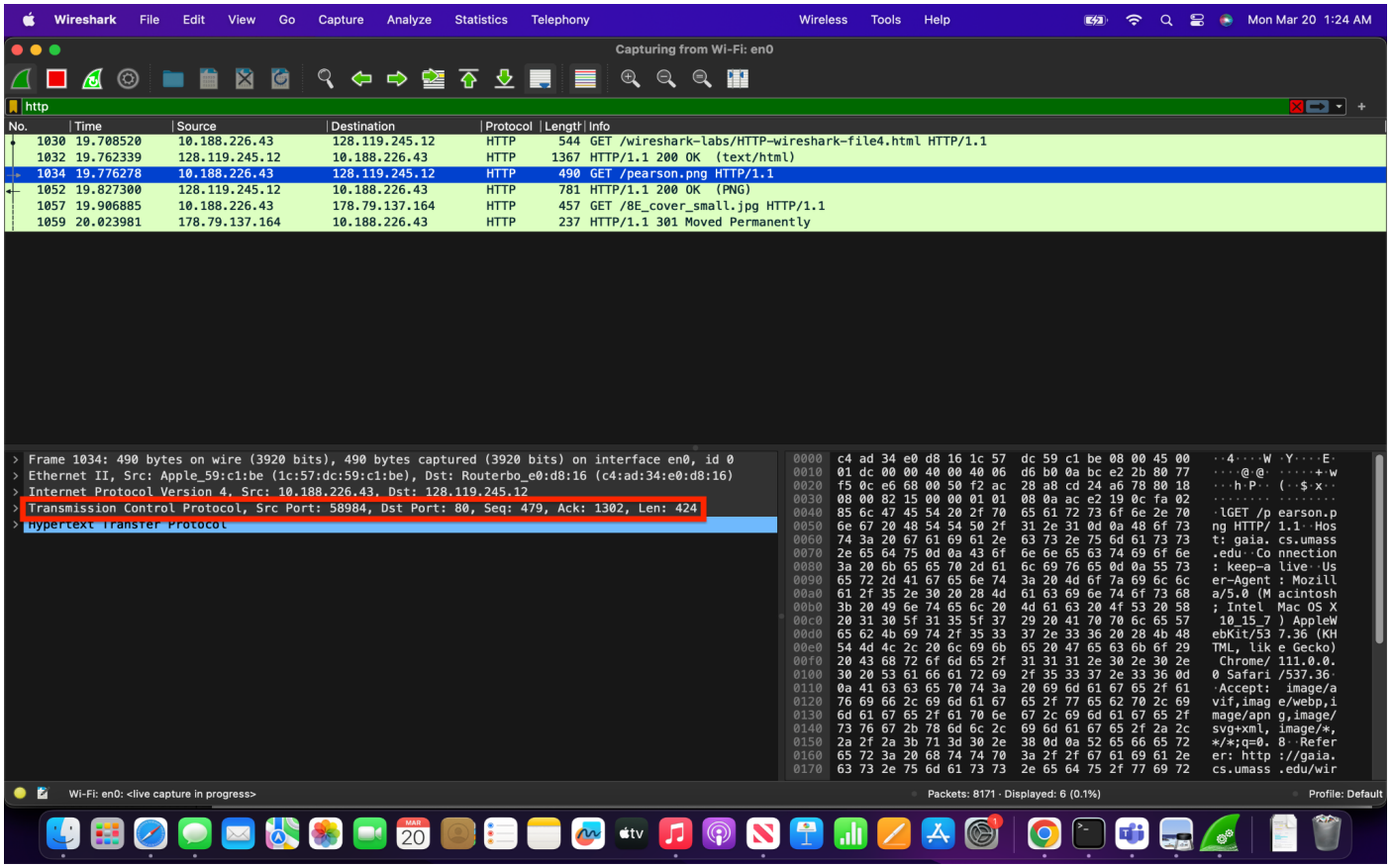


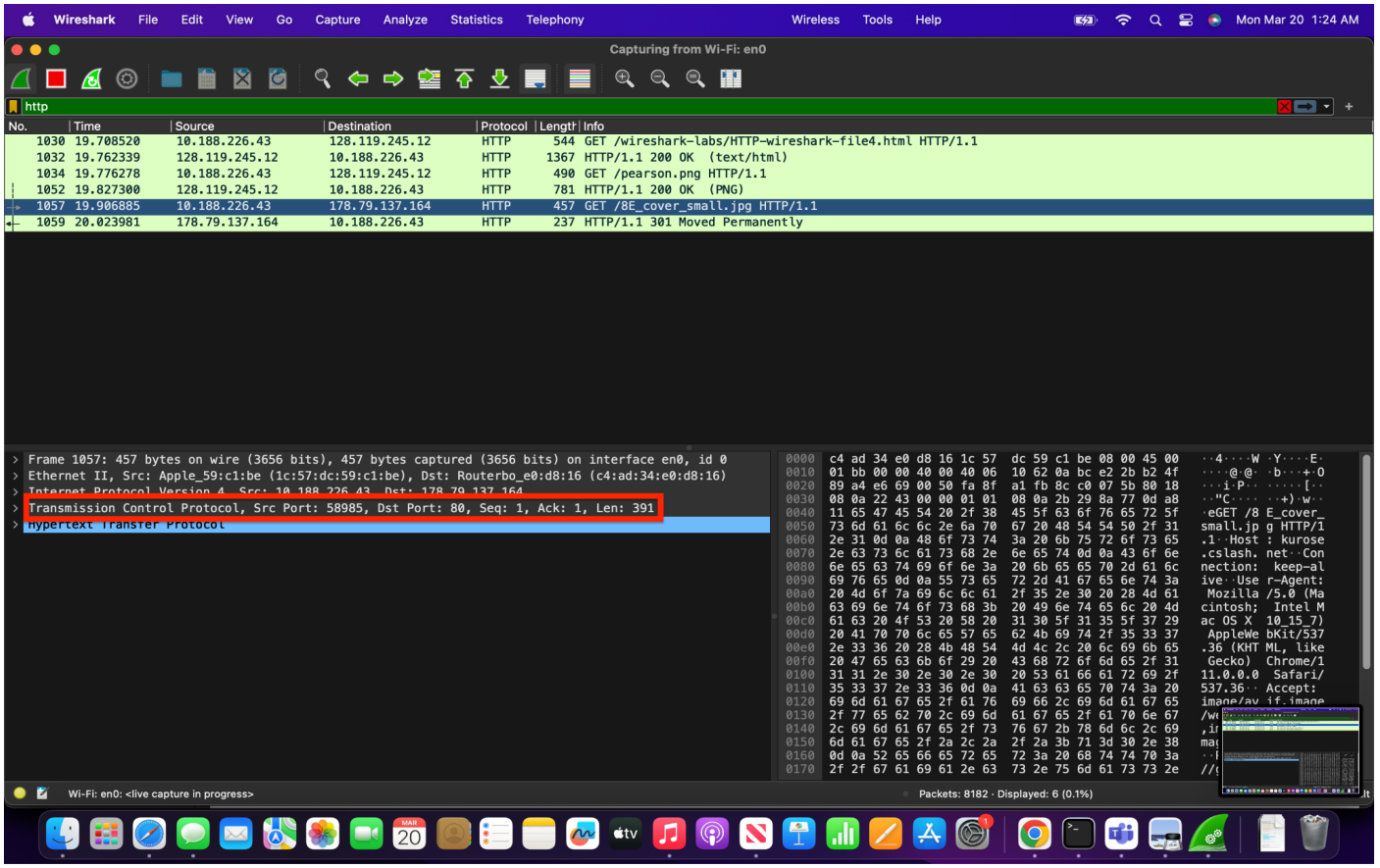
HTML Documents With Embedded Objects

16. How many HTTP GET request messages did your browser send? To which Internet addresses were these GET requests sent?
    - 3 HTTP GET request messages were sent by the browser to the server.
        - The 1st GET request was sent to retrieve the html(base file). This html file contains a link to 2 images.
        - So, the 2nd and 3rd requests were sent to retrieve those images.
    - 1st IP Address: 128.119.245.12
    - 2nd IP Address: 128.119.245.12
    - 3rd IP Address: 178.79.137.164



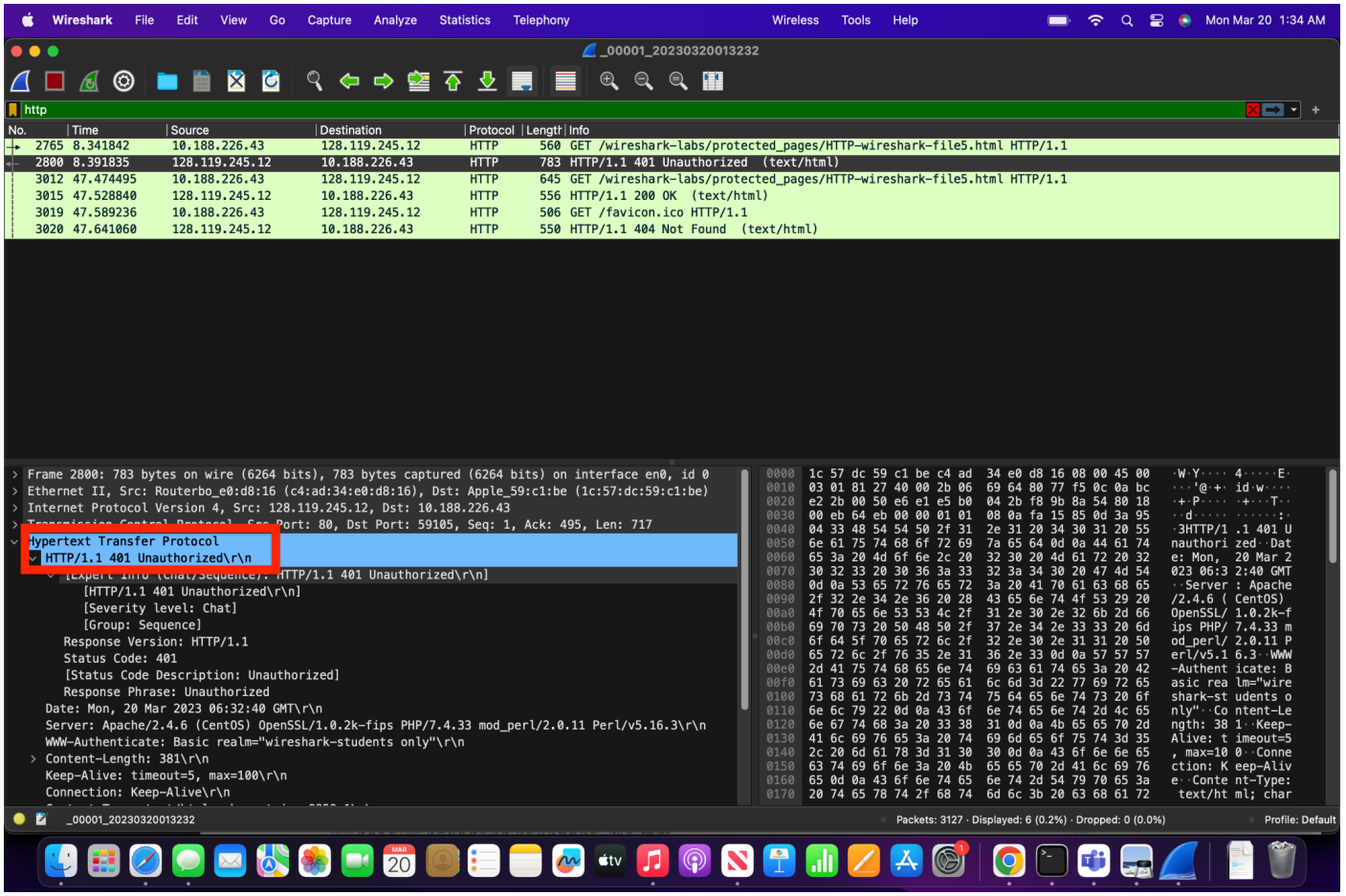
17. Can you tell whether your browser downloaded the two images serially, or whether they were downloaded from the two websites in parallel? Explain.
    - We can determine whether our data were downloaded serially or in parallel by looking at the TCP ports. The two images in this particular case were received sequentially because they were sent over two separate TCP connections.





HTTP Authentication

18. What is the server's response (status code and phrase) in response to the initial HTTP GET message from your browser?
    - The server response to the initial HTTP GET request is "401 Unauthorized"



19. When your browser's sends the HTTP GET message for the second time, what new field is included in the HTTP GET message?
    - The new field in the second HTTP GET message is 'Authorization' as seen in the screenshot below.